

IN THE CLAIMS

Please amend the claims as follows. The following listing of claims replaces all prior versions.

1-23. (Canceled).

24. (Withdrawn) A method for assessing the presence of a nucleic acid analyte in a sample using a molecular beacon probe, the method comprising

contacting a set of primers and a sample containing the nucleic acid analyte to amplify the analyte; and

detecting the amplified analyte or its complement by means of the probe, said probe comprising the probe of claim 40, thereby assessing the presence of nucleic acid analyte in the sample.

25. (Withdrawn) A method for assessing the presence of a nucleic acid analyte in a sample using a molecular beacon probe, the method comprising

contacting a set of primers and a sample containing the nucleic acid analyte to amplify the analyte; and

detecting the amplified analyte or its complement by means of the probe, said probe comprising the probe of claim 41, thereby assessing the presence of nucleic acid analyte in the sample.

26-27. (Canceled).

28. (Withdrawn) The method of claim 24 wherein the diagnostic assay is a homogenous assay.

29. (Withdrawn) The method of claim 25 wherein the diagnostic assay is a homogenous assay.

30-31. (Canceled).

32. (Withdrawn) The method of claim 24 wherein the diagnostic assay is a heterogeneous assay.

33. (Withdrawn) The method of claim 25 wherein the diagnostic assay is a heterogeneous assay.

34-35. (Canceled).

36. (Withdrawn) The method of claim 24, wherein the nucleotides or nucleotide analogues having an affinity increasing modification are selected from the group consisting of 2' -O-derivatized nucleotides, locked nucleic acids and peptide nucleic acids.

37. (Withdrawn) The method of claim 25, wherein the nucleotides or nucleotide analogues having an affinity increasing modification are selected from the group consisting of 2' -O-derivatized nucleotides, locked nucleic acids and peptide nucleic acids.

38-39. (Canceled).

40. (Currently amended) A molecular beacon probe, comprising:
a stem comprising

~~one or more nucleotides or nucleotide analogues having an affinity increasing modification, wherein said one or more nucleotides or nucleotide analogues are selected from the group consisting of a 2' -O-derivatized nucleotide, a locked nucleic acid, and a peptide nucleic acid, and~~

one or more unmodified nucleotides, and
in the 3' strand of the stem, one or more nucleotides or nucleotide analogues having an affinity increasing modification, wherein said one or more nucleotides or nucleotide analogues are selected from the group consisting of a 2'-O-derivatized nucleotide, a locked nucleic acid, and a peptide nucleic acid,

wherein each base pair of said stem comprises no more than one 2'-O-derivatized methyl nucleotide, and

further wherein said probe has better stability and does not open spontaneously in the presence of contaminants present in an amplification enzyme mixture comprising said molecular beacon probe as compared to a molecular beacon probe without said stem.

41. (Currently amended) A molecular beacon probe comprising a stem and a loop, wherein said loop comprises:

one or more nucleotides and/or nucleotide analogues that have an affinity increasing modification, and one or more unmodified nucleotides; and

said stem comprises:

~~one or more 2'-O-methyl nucleotides, and~~

one or more unmodified nucleotides, and

in the 3' strand of the stem, one or more 2'-O-methyl nucleotides,

wherein each base pair of said stem comprises no more than one 2'-O-methyl nucleotide,

wherein the sensitivity of said probe to polymorphisms in the target nucleic acid sequence is lowered as compared to a molecular beacon probe without said loop and wherein the spontaneous opening of the probe in the presence of contaminants present in an amplification enzyme mixture comprising said molecular beacon probe is lowered as compared to a molecular beacon probe without said stem.

42. (Canceled).

43. (Previously Presented) The molecular beacon probe as claimed in claim 41, wherein the nucleotides or nucleotide analogues having an affinity increasing modification are selected from the group consisting of 2'-O-derivatized nucleotides, locked nucleic acids, and peptide nucleic acids.

44. (Previously Presented) The molecular beacon probe as claimed in claim 40, wherein the 2'-O-derivatized nucleotide is a 2'-O-methyl-nucleotide.

45-46. (Canceled).

47. (Currently amended) The molecular beacon probe as claimed in claim 40, wherein at least one base pair constituting the of said stem contains no nucleotide or nucleotide analogue having an affinity increasing modification.

48. (Currently amended) The molecular beacon probe as claimed in claim 41, wherein at least one base pair constituting the of said stem contains no nucleotide or nucleotide analogue having an affinity increasing modification.

49. (Currently amended) The molecular beacon probe as claimed in claim 40, wherein only one base pair constituting the stem contains no nucleotide or nucleotide analogue having an affinity increasing modification of said stem comprises no nucleotide or nucleotide analogue having an affinity increasing modification.

50. (Currently amended) The molecular beacon probe as claimed in claim 41, wherein only one base pair constituting the stem contains no nucleotide or nucleotide analogue having an affinity increasing modification of said stem comprises no nucleotide or nucleotide analogue having an affinity increasing modification.

51-53. (Canceled).

54. (Previously Presented) A kit for performing a diagnostic amplification assay, comprising the appropriate primers, polymerase(s) and reagents for performing amplification of an analyte to be diagnosed and a probe or a molecular probe as claimed in claim 40 for detecting the amplified analyte.

55. (Previously Presented) A kit for performing a diagnostic amplification assay, comprising the appropriate primers, polymerase(s) and reagents for performing amplification of an analyte to be diagnosed and a probe or a molecular probe as claimed in claim 41 for detecting the amplified analyte.

56. (Canceled).

57. (New) A molecular beacon probe, comprising:

a stem comprising

one or more nucleotides or nucleotide analogues having an affinity increasing modification, wherein said one or more nucleotides or nucleotide analogues are selected from the group consisting of a 2'-O-derivatized nucleotide, a locked nucleic acid, and a peptide nucleic acid, and
one or more unmodified nucleotides,

wherein each base pair of said stem comprises no more than one 2'-O-derivatized nucleotide and only one base pair of said stem comprises no nucleotide or nucleotide analogue having an affinity increasing modification, and

further wherein said probe has better stability and does not open spontaneously in the presence of contaminants present in an amplification enzyme mixture comprising said molecular beacon probe as compared to a molecular beacon probe without said stem.

58. (New) The molecular beacon probe as claimed in claim 57, wherein the 2'-O-derivatized nucleotide is a 2'-O-methyl-nucleotide.

59. (New) A molecular beacon probe comprising a stem and a loop, wherein said loop comprises:

one or more nucleotides and/or nucleotide analogues that have an affinity increasing modification, and one or more unmodified nucleotides; and

said stem comprises:

one or more 2'-O-methyl nucleotides, and

one or more unmodified nucleotides,

wherein each base pair of said stem comprises no more than one 2'-O-methyl nucleotide and only one base pair of said stem comprises no nucleotide or nucleotide analogue having an affinity increasing modification,

wherein the sensitivity of said probe to polymorphisms in the target nucleic acid sequence is lowered as compared to a molecular beacon probe without said loop and wherein the spontaneous opening of the probe in the presence of contaminants present in an amplification enzyme mixture comprising said molecular beacon probe is lowered as compared to a molecular beacon probe without said stem.

60. (New) A molecular beacon probe, comprising:

a stem comprising

one or more unmodified nucleotides, and

in each strand of said stem, at least one nucleotide or nucleotide analogue having an affinity increasing modification, wherein said one or more nucleotides or nucleotide analogues are selected from the group consisting of a 2'-O-derivatized nucleotide, a locked nucleic acid, and a peptide nucleic acid,

wherein each base pair of said stem comprises no more than one 2'-O-derivatized-nucleotide,

and

further wherein said probe has better stability and does not open spontaneously in the presence of contaminants present in an amplification enzyme mixture comprising said molecular beacon probe as compared to a molecular beacon probe without said stem.

61. (New) The molecular beacon probe as claimed in claim 60, wherein the 2'-O-derivatized nucleotide is a 2'-O-methyl-nucleotide.

62. (New) The molecular beacon probe as claimed in claim 60, wherein only one base pair of said stem comprises no nucleotide or nucleotide analogue having an affinity increasing modification.

63. (New) A molecular beacon probe comprising a stem and a loop, wherein said loop comprises:

one or more nucleotides and/or nucleotide analogues that have an affinity increasing modification, and one or more unmodified nucleotides; and

said stem comprises:

one or more unmodified nucleotides, and

in each strand of said stem, at least one 2'-O-methyl nucleotide,

wherein each base pair of said stem comprises no more than one 2'-O-methyl nucleotide,

wherein the sensitivity of said probe to polymorphisms in the target nucleic acid sequence is lowered as compared to a molecular beacon probe without said loop and wherein the spontaneous opening of the probe in the presence of contaminants present in an amplification enzyme mixture comprising said molecular beacon probe is lowered as compared to a molecular beacon probe without said stem.

64. (New) The molecular beacon probe as claimed in claim 63, wherein only one base pair of said stem comprises no nucleotide or nucleotide analogue having an affinity increasing modification.